

CLAIMS:

1. A method comprising:
 - 2 detecting an amplitude of an oscillator signal generated by an oscillator during a calibration mode in which a phase lock loop is disabled;
 - 4 comparing the detected amplitude to a target amplitude; and adjusting the oscillator based on the comparison.
2. The method of claim 1, further comprising enabling a phase locked loop
 - 2 to control frequency of the oscillator after adjusting the oscillator.
3. The method of claim 1, wherein the oscillator comprises a voltage
 - 2 controlled oscillator with a configurable tail current source, wherein detecting the amplitude comprises detecting an output voltage amplitude of the VCO, and
 - 4 wherein adjusting the oscillator comprises adjusting the configurable tail current source to achieve a desired output voltage amplitude.
4. The method of claim 3, wherein the a tail current source includes a set of
 - 2 switched unit current sources, wherein adjusting the tail current source comprises selectively activating a subset of the switched unit current sources.
5. The method of claim 4, wherein selectively activating the subset of the
 - 2 switched unit current sources comprises de-activating switched unit current sources in discrete steps until the output voltage amplitude would fall below the
 - 4 target amplitude.
6. The method of claim 1, further comprising selecting the desired target
 - 2 amplitude based on an operation mode of a wireless communication device implementing the oscillator.
7. The method of claim 1, further comprising adjusting discrete circuitry of
 - 2 the oscillator that affects a frequency of the oscillator prior to enabling a phase locked loop.

8. The method of claim 1, wherein detecting the amplitude comprises
2 generating a DC voltage indicative of the amplitude of an oscillator signal, and
wherein comparing the detected amplitude to a target amplitude comprises
4 comparing the generated DC voltage to a target DC voltage.
9. A method of calibrating an amplitude of an oscillator comprising:
2 setting a configurable tail current source of the oscillator to a maximum
current setting; and
4 reducing the current setting of the configurable tail current source in
discrete steps until the amplitude of the oscillator would fall below a target.
10. The method of claim 9, wherein reducing the current setting of the
2 configurable tail current source in discrete steps comprises de-activating switched
unit current sources in discrete steps.
11. The method of claim 9, further comprising selecting the target based on a
2 mode of operation of a wireless communication device implementing the
oscillator.
12. A frequency synthesizer comprising:
2 an oscillator including a configurable tail current source;
a phase locked loop that controls a frequency of an oscillating signal of
4 the oscillator; and
an amplitude calibration unit that calibrates the configurable tail current
6 source when the phase locked loop is disabled in order to achieve a desired
amplitude for the oscillating signal.
13. The frequency synthesizer of claim 12, wherein the oscillator comprises a
2 voltage controlled oscillator, and the configurable tail current source comprises a
number of switched unit current sources, wherein the amplitude calibration unit
4 detects a voltage amplitude of the oscillator and adjusts the configurable tail
current source by activating a subset of the switched unit current sources to
6 achieve the desired voltage amplitude of the oscillator.

14. The frequency synthesizer of claim 13, wherein the amplitude calibration
2 unit activates the subset of switched unit current sources by de-activating
switched unit current sources in discrete steps until voltage amplitude of the
4 oscillator would fall below a target.

15. The frequency synthesizer of claim 12, wherein the frequency synthesizer
2 enables the phase locked loop following calibration of the configurable tail
current source.

16. The frequency synthesizer of claim 12, wherein the oscillator includes
2 additional configurable circuitry that affects the frequency of the oscillator,
wherein the frequency synthesizer further comprises a frequency calibration unit
4 that adjusts the additional configurable circuitry of the oscillator to adjust the
frequency of the oscillator when the phase locked loop is disabled.

17. A frequency synthesizer comprising:
2 an oscillator including a configurable tail current source;
circuitry that sets the configurable tail current source of the oscillator to a
4 maximum current setting; and
circuitry that reduces the current setting of the configurable tail current
6 source in discrete steps until an oscillating signal of the oscillator is below a
target.

18. The frequency synthesizer of claim 17, wherein the circuitry that reduces
2 the current setting reduces the current setting in discrete steps by de-activating
switched unit current sources in discrete steps.

19. The frequency synthesizer of claim 17, further comprising circuitry that
2 selects the target based on a mode of operation of a wireless communication
device implementing the oscillator.

20. A wireless communication device comprising:
2 frequency synthesizer that generates waveforms, wherein the frequency
synthesizer comprises an oscillator including a configurable tail current source, a

- 4 phase locked loop that controls a frequency of an oscillating signal of the
oscillator, and an amplitude calibration unit that calibrates the configurable tail
6 current source when the phase locked loop is disabled in order to achieve a
desired amplitude of the oscillating signal; and
8 a mixer that mixes the waveforms.

21. The wireless communication device of claim 20, further comprising a
2 receiver that receives RF waveforms, wherein the mixer down-mixes the received
RF waveforms to a baseband signal using the waveforms generated by the
4 frequency synthesizer as a timing reference.

22. The wireless communication device of claim 20, further comprising a
2 transmitter that transmits the waveforms, wherein the mixer modulates baseband
signals into the waveforms prior to transmission.

23. A wireless communication device comprising:
2 frequency synthesizer that generates waveforms, wherein the frequency
synthesizer comprises an oscillator including a configurable tail current source,
4 circuitry that sets the configurable tail current source of the oscillator to a
maximum current setting, and circuitry that reduces the current setting of the
6 configurable tail current source in discrete steps until an oscillating signal of the
oscillator is below a target; and
8 a mixer that mixes the waveforms.

24. The wireless communication device of claim 23, further comprising a
2 receiver that receives RF waveforms, wherein the mixer down-mixes the received
RF waveforms to a baseband signal using the waveforms generated by the
4 frequency synthesizer as a timing reference.

25. The wireless communication device of claim 23, further comprising a
2 transmitter that transmits the waveforms, wherein the mixer modulates baseband
signals into the waveforms prior to transmission.

26. An apparatus comprising:

- 2 circuitry that detects a signal amplitude of an oscillator for an input
parameter prior to enabling a phase locked loop; and
4 circuitry that adjusts the oscillator to achieve a desired signal amplitude.

27. The apparatus of claim 26, wherein the oscillator comprises a voltage
2 controlled oscillator that includes a configurable tail current source comprising a
set of switched unit current sources, wherein the circuitry that adjusts the
4 oscillator selectively activates a subset of the switched unit current sources to
achieve the desired signal amplitude.

28. The apparatus of claim 26, wherein the circuitry that adjusts the oscillator
2 selectively activates the subset by de-activating switched unit current sources in
discrete steps until signal amplitude of the oscillator is below a target.

29. The apparatus of claim 26, further comprising circuitry that selects the
2 desired signal amplitude based on an operation mode of a wireless
communication device implementing the oscillator.

30. The apparatus of claim 26, further comprising:
2 circuitry that calibrates a signal frequency of the oscillator; and
circuitry that enables the phase locked loop after adjusting the oscillator to
4 achieve a desired signal amplitude and after calibrating the signal frequency of
the oscillator.

31. An apparatus comprising:
2 circuitry that sets a configurable tail current source of an oscillator to a
maximum current setting; and
4 circuitry that reduces the current setting of the configurable tail current
source in discrete steps until an amplitude of an oscillating signal of the oscillator
6 is below a target.

32. The apparatus of claim 31, wherein the configurable tail current source
2 includes a set of switched unit current sources, wherein the circuitry that reduces

the current setting of the adjustable tail current source in discrete steps

4 de-activates the switched unit current sources in discrete steps.

33. The apparatus of claim 31, further comprising circuitry that selects the
2 target based on a mode of operation of a wireless communication device
implementing the apparatus.

34. A frequency synthesizer comprising:
2 an oscillator;
means for disabling a phase locked loop of an oscillator;
4 means for detecting a signal amplitude of the oscillator for an input
parameter when the phase locked loop is disabled; and
6 means for adjusting the oscillator to achieve a desired signal amplitude.

35. The frequency synthesizer of claim 34, wherein the oscillator includes a
2 configurable tail current source, wherein the means for adjusting comprises a set
of switched unit current sources in the tail current source.

36. A frequency synthesizer comprising:
2 an oscillator including a configurable tail current source;
means for setting the configurable tail current source of the oscillator to a
4 maximum current setting; and
means for reducing the current setting of the configurable tail current
6 source in discrete steps until an amplitude of a signal of the oscillator would be
below a target.

37. The frequency synthesizer of claim 36, wherein in the means for reducing
2 comprises a set of switched unit current sources.

38. The frequency synthesizer of claim 36, further comprising means for
2 selecting the target based on a mode of operation of a wireless communication
device implementing the frequency synthesizer.

39. An oscillator comprising:

- 2 an oscillator tank that generates an oscillating voltage signal; and
a configurable tail current source that defines an amplitude of the
4 oscillating voltage signal, wherein the configurable tail current source includes a
set of switched unit current sources that can be selectively activated to adjust the
6 amplitude.